

**REMARKS**

The present Amendment amends claims 7 and 8. Therefore, the present application has pending claims 7 and 8.

**Claim Objections**

Claim 8 stands objected to due to an informality noted by the Examiner. Applicants amended claim 8 to overcome this objection. Therefore, this objection should be withdrawn.

**35 U.S.C. §112 Rejections**

Claim 8 stands rejected under 35 U.S.C. §112, second paragraph as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. This rejection is traversed for the following reasons. Applicants submit that claim 8, as now more clearly recited, is in compliance with the provisions of 35 U.S.C. §112.

**35 U.S.C. §103 Rejections**

Claims 7 and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Gateway Application for Automotive Network System "BEAN"* to Tanaka et al. ("Tanaka") in view of U.S. Patent No. 5,815,071 to Doyle, and further in view of U.S. Patent No. 6,370,475 to Breed et al. ("Breed"). This rejection is traversed for the following reasons. Applicants submit that the features of the present invention, as now more clearly recited in claims 7 and 8, are not taught or suggested by Tanaka, Doyle or Breed, whether taken individually or in combination with each other in the manner suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

Amendments were made to the claims to more clearly describe features of the present invention. Specifically, amendments were made to the claims to more clearly recite that the present invention is directed to a distributed computer system for an automobile as recited, for example, in independent claim 7.

The present invention, as recited in claim 7, provides a distributed computer system for an automobile. The system includes a first computer network to which at least one device that periodically sends or receives messages is connected, a second computer network to which at least one device that sends or receives messages in response to an event or demand is connected, and a gateway connected to the first and second computer networks.

The gateway includes a periodic message receiving means that receives messages which the first computer network sends periodically, and an event message receiving means that receives an event message delivered on the first network in response to an event or a demand. The gateway also includes a periodic/event message buffer means that stores the messages received by the periodic message receiving means. Also included in the gateway is an event/periodic message buffer means that stores data of the event message. Further, the gateway includes a message value change detecting means that detects a change of the value of the data included in each of the messages stored in the periodic/event message buffer means. Even further, the gateway includes a periodic message sending means that delivers periodically the data stored in the event/periodic message buffer means as a periodic message on the second network. Yet even further, the gateway includes an event message sending means that produces a message from the data stored in the first memory means when the

message value change detecting means detects the change of the value of the data, and that delivers the produced message to the second computer network.

According to the present invention, as recited in claim 7, the at least one device connected to the first computer network that periodically sends or receives messages is an engine controlling device or an adaptive cruise control (ACC) controlling unit, and the at least one device that sends or receives messages in response to the event or demand is a navigation system or an internet terminal. The prior art does not teach or suggest all of these features.

The above described features of the present invention, as now more clearly recited in the claims, are not taught or suggested by any of the references of record. Specifically, the features are not taught or suggested by either of Tanaka, Doyle or Breed, whether taken individually or in combination with each other.

Tanaka teaches applying a gateway application to an automotive network system. However, there is no teaching or suggestion in Tanaka of the distributed computer system for an automobile as recited in claim 7 of the present invention.

Tanaka discloses where in applying a LAN to automotive electronics systems, an optimal protocol has been adopted for each system, such as a body electronics system, an entertainment system, a service system, and a power train system. As a low cost communication protocol, "BEAN" (Body Electronics Area Network) is adapted to a wider range of functions on a vehicle, and ECU's (engine control unit) numbers are increased. Tanaka rationalizes those network systems with the gateway function on a delegated ECU for each LAN system on a vehicle. This system also realizes the connection to after market products by data exchange through the gateway function, while securing vehicle failsafe.

The present invention includes an event message mode, in which a message is output from a processing apparatus onto a network in response to the generation of an event, and a period message mode, in which a message is output from the processing apparatus onto a network at a predetermined period. According to the present invention, messages are exchanged, in real time, between a network to which the processing apparatus which outputs the event message is connected and a network to which the processing apparatus which outputs the period message.

One feature of the present invention, as recited in claim 7, includes a periodic/event message buffer means that stores the messages received by the periodic message receiving means. As shown in Fig. 1, the gateway 10 includes the periodic/event message buffer 202. With reference to Fig. 3, the periodic/event message buffer 202 stores the message received by the period message receiving means. The period/event message buffer 202 includes a message ID storing area 20210, a this-time-value (value of the most recent message) storing area 20220, and a last-time-value (value of the message received most previously after the most recent message) storing area 20230. Further, these areas are divided into storing areas per ID. That is, the ID storing area 20210 includes an area 20211, an area 20212, an area 20213, etc. The this-time-value storing area 20220 includes an area 20221, an area 20222, an area 20223, etc. per respective ID. The last-time-value storing area 20230 also includes an area 20231, an area 20232, an area 20233, etc. per ID. For example, the message of ID2 is stored so that the value (2) of its ID is stored in the area 20211, the this-time-value (20) is stored in the area 20221 and the last-time-value (18) is stored in the area 20231. Tanaka does not disclose a

periodic/event message buffer means that stores the messages received by the periodic message receiving means, in the manner claimed.

For example, as described on page 5, paragraphs 1-2, Tanaka discloses a bus buffer and a queue buffer. Neither of these buffers stores messages received by a period message receiving means, as in the present invention. Accordingly, Tanaka does not teach or suggest the claimed feature.

Another feature of the present invention, as recited in claim 7, includes an event/periodic message buffer means that stores data of the event message. As shown in Fig. 1, the gateway 10 includes an event/period message buffer 201. With reference to Fig. 8, the event/period message buffer 201 has a message ID storing area 20110 and a value storing area 20120. Further, these areas are divided into storing areas per ID. That is, the ID storing area 20110 includes an area 20111, an area 20112, an area 20113, etc. The value storing area 20120 includes an area 20121, an area 20122, an area 20123, etc. In Fig. 8, for example, in the case of the message having the ID value of 1, the value of the message read out is stored in the area 20121. In the case of the message having the ID value of 5, the value of the message read out is stored in the area 20122. Tanaka does not disclose an event/periodic message buffer means, in the manner claimed.

For example, as described on page 4, paragraph 4, Tanaka discloses where in the gateway from the body control system LAN to the dealer-installed option LAN, a dealer-installed option bus buffer receives the BEAN frame format from the body control system LAN. In the gateway from the dealer-installed option to the body control system, the dealer-installed option bus buffer receives the BEAN frame

format from the dealer-installed option LAN. This bus buffer is not the same as the event/periodic message buffer of the present invention.

Yet another feature of the present invention, as recited in claim 7, includes a message value change detecting means that detects a change of the value of the data included in each of the messages stored in the periodic/event message buffer means. As shown in Fig. 1, the gateway 10 includes a message value change detecting process 280. With reference to Fig. 4, the message value change detecting process 2800, when started up, first reads out the message stored in the period/event message buffer 202 to check whether or not the this-time-value of the received message is different from the last-time-value thereof (Process 2801). For example, if in Fig. 3 the ID of the message is 2, both are different since its this-time-value is 20 and its last-time-value is 18. If the ID of the message is 6, both are the same since its this-time-value is 6400 and its last-time-value is also 6400. If the last-time-value and the this-time-value are different from each other, the event message sending process 270 is started up (Process 2802), whereas if the last-time-value and the this-time-value are the same, the processing is completed without any additional process. Tanaka does not disclose a message value change detecting process, in the manner claimed.

To support the assertion that Tanaka teaches a message value change detecting process, the Examiner cites page 4, paragraphs 1 and 2, alleging that a ““negative response” is taught (i.e., change in value that would necessitate retransmission)”. However, neither the cited text nor any other portion of Tanaka teaches or suggests the claimed feature. The cited text provides an example of an operation sequence involving a negative response. With reference to Fig. 9, Tanaka

teaches where until a response is sent from the target ECU, the body control ECU continues to send a negative response to the service tool, enabling the tool to wait for a response from the target ECU. This is not the same as the present invention, where a message value change detecting means detects a change of the value of the data included in each of the messages stored in the periodic/event message buffer means.

Therefore, Tanaka fails to teach or suggest "periodic/event message buffer means that stores the messages received by said periodic message receiving means" as recited in claim 7.

Furthermore, Tanaka fails to teach or suggest "event/periodic message buffer means that stores data of said event message" as recited in claim 7.

Further, Tanaka fails to teach or suggest "message value change detecting means that detects a change of the value of the data included in each of the messages stored in said periodic/event message buffer means" as recited in claim 7.

The above noted deficiencies of Tanaka are not supplied by any of the other references of record, namely Doyle, whether taken individually or in combination with each other. Therefore, combining the teachings of Tanaka and Doyle in the manner suggested by the Examiner still fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

Doyle teaches a method and apparatus for monitoring parameters of vehicle electronic control units. However, there is no teaching or suggestion in Doyle of the distributed computer system for an automobile as recited in claim 7 of the present invention.

Doyle discloses a system for monitoring and the adjustment of control unit parameter settings of vehicle electronic control units. The monitoring system may be implemented in a vehicle which incorporates one or more electronic control units for regulating one more operational parameters of the vehicle in accordance with corresponding control unit parameter settings. In an exemplary implementation, the vehicle is equipped with a mobile communications terminal (MCT), which receives from a base station a list of operational parameters to be monitored. Each of the electronic control units, as well as a memory unit, is connected to an internal data link of the vehicle. When a parameter value within the memory unit corresponding to a given control unit is changed, a message is provided to the base station specifying the value currently registered by the control unit. The currently registered value is then compared to an expected parameter value, and an error message is generated if disagreement exists there between. The system also allows vehicle control unit parameter settings to be adjusted from a remote location such as a base station. The MCT of each vehicle is disposed to generate message packets containing updated control unit parameter information received from the base station. The message packets are then sent to a selected electronic control unit over the data link, thereby allowing the updated control unit parameter information to be loaded therein.

One feature of the present invention, as recited in claim 7, includes a periodic/event message buffer means that stores the messages received by the periodic message receiving means. Doyle does not disclose this feature, and the Examiner does not rely upon Doyle for teaching this feature.



Another feature of the present invention, as recited in claim 7, includes an event/periodic message buffer means that stores data of the event message. Doyle does not disclose this feature, and the Examiner does not rely upon Doyle for teaching this feature.

Yet another feature of the present invention, as recited in claim 7, includes a message value change detecting means that detects a change of the value of the data included in each of the messages stored in the periodic/event message buffer means. Doyle does not disclose this feature, and the Examiner does not rely upon Doyle for teaching this feature.

Therefore, Doyle fails to teach or suggest “periodic/event message buffer means that stores the messages received by said periodic message receiving means” as recited in claim 7.

Furthermore, Doyle fails to teach or suggest “event/periodic message buffer means that stores data of said event message” as recited in claim 7.

Further, Doyle fails to teach or suggest “message value change detecting means that detects a change of the value of the data included in each of the messages stored in said periodic/event message buffer means” as recited in claim 7.

The above noted deficiencies of Tanaka in view of Doyle are not supplied by any of the other references of record, namely Breed, whether taken individually or in combination with each other. Therefore, combining the teachings of Tanaka, Doyle and Breed in the manner suggested by the Examiner still fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

Breed teaches an accident avoidance system. However, there is no teaching or suggestion in Breed of the distributed computer system for an automobile as recited in claim 7 of the present invention.

Breed discloses a system and method for preventing vehicle accidents in which the absolute position of the vehicle is determined, for example, by using a satellite-based positioning system such as GPS, and the location of the vehicle relative to the edges of the roadway is then determined based on the absolute position of the vehicle and stored data relating to edges of roadways on which the vehicle may travel. A system or component within the vehicle is initiated, for example, an alarm or warning system, or the operation of a system or component is affected, for example, an automatic guidance system, if the location of the vehicle approaches close to an edge of the roadway or intersects with an edge of the roadway.

One feature of the present invention, as recited in claim 7, includes a periodic/event message buffer means that stores the messages received by the periodic message receiving means. Breed does not disclose this feature, and the Examiner does not rely upon Breed for teaching this feature.

Another feature of the present invention, as recited in claim 7, includes an event/periodic message buffer means that stores data of the event message. Breed does not disclose this feature, and the Examiner does not rely upon Breed for teaching this feature.

Yet another feature of the present invention, as recited in claim 7, includes a message value change detecting means that detects a change of the value of the data included in each of the messages stored in the periodic/event message buffer

means. Breed does not disclose this feature, and the Examiner does not rely upon Breed for teaching this feature.

Therefore, Breed fails to teach or suggest "periodic/event message buffer means that stores the messages received by said periodic message receiving means" as recited in claim 7.

Furthermore, Breed fails to teach or suggest "event/periodic message buffer means that stores data of said event message" as recited in claim 7.

Further, Breed fails to teach or suggest "message value change detecting means that detects a change of the value of the data included in each of the messages stored in said periodic/event message buffer means" as recited in claim 7.

Each of Tanaka, Doyle and Breed suffer from the same deficiencies, relative to the features of the present invention, as recited in the claims. Therefore, combining the teachings of Tanaka, Doyle and Breed in the manner suggested by the Examiner does not render obvious the features of the present invention as now more clearly recited in the claims. Accordingly, reconsideration and withdrawal of the 35 U.S.C. §103(a) rejection of claims 7 and 8 as being unpatentable over Tanaka in view of Doyle, and further in view of Breed, are respectfully requested.

The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references used in the rejection of claims 7 and 8.

In view of the foregoing amendments and remarks, Applicants submit that claims 7 and 8 are in condition for allowance. Accordingly, early allowance of claims 7 and 8 is respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Mattingly, Stanger & Malur, P.C., Deposit Account No. 50-1417 (referencing Attorney Docket No. 503.39781X00).

Respectfully submitted,

MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.

A handwritten signature in cursive script, appearing to read "Donna K. Mason", is written over a horizontal line.

Donna K. Mason  
Registration No. 45,962

DKM/cmd  
(703) 684-1120